

**Goode, Teresa**

---

**From:** Johnson, Chris <chris.johnson@ncdenr.gov>  
**Sent:** Thursday, July 06, 2017 3:02 PM  
**To:** Strynar, Mark  
**Subject:** Sampling

Mark, I just finished a call with Linda Culpepper and the Supervisors of the Fayetteville and Wilmington regional offices. We want to do one more sampling event for the Fayetteville sites (three sites) next week on Wednesday or Thursday. This is to get another result for the upstream sample since it was only done in weeks 2 and 3. Is that doable from your end? If so, we would need another set of the QC samples if you so desire. Samples will also be going to TestAmerica once again, so we would need a QC set for them as well. We have additional sample containers available from the set you provided, so we won't need those this time. Let me know if all this is acceptable for your laboratory. Thanks.

**Chris Johnson**  
Environmental Program Supervisor  
Water Sciences Section / Organic Chemistry Branch

North Carolina Department of Environmental Quality  
Division of Water Resources

919-733-3908 office

4405 Reedy Creek Road  
Raleigh, NC 27607

*Email correspondence to and from this address is subject to the  
North Carolina Public Records Law and may be disclosed to third parties.*

**Goode, Teresa**

---

**From:** Strynar, Mark  
**Sent:** Thursday, July 06, 2017 4:09 PM  
**To:** Medina-Vera, Myriam; Buckley, Timothy  
**Cc:** McCord, James  
**Subject:** FW: Sampling

FYI,

I just got off of a call with Chris Johnson. It seems the NCDEQ people would like to do one more round of sampling per a request from Chemours. It seems that in the Week one sampling they were surprised by the high results. That would mean a week 4 sampling excursion mid to late next week at both Fayetteville and Wilmington locations. I told him we could handle the capacity but I would be away and those results may be delayed. I think James can handle it but I wanted to let you know. I don't see any reason why we cannot do these samples. It is still below the 50 we agreed we could do. I think we can still hit the deadline for the Week1-3 samples. Not sure about week number 4.

Thus I need to give Chris QC samples for Test America and for our efforts when he arrives tomorrow.

I will come to chat with you.

Mark

**From:** Johnson, Chris [mailto:chris.johnson@ncdenr.gov]  
**Sent:** Thursday, July 06, 2017 3:02 PM  
**To:** Strynar, Mark <Strynar.Mark@epa.gov>  
**Subject:** Sampling

Mark, I just finished a call with Linda Culpepper and the Supervisors of the Fayetteville and Wilmington regional offices. We want to do one more sampling event for the Fayetteville sites (three sites) next week on Wednesday or Thursday. This is to get another result for the upstream sample since it was only done in weeks 2 and 3. Is that doable from your end? If so, we would need another set of the QC samples if you so desire. Samples will also be going to TestAmerica once again, so we would need a QC set for them as well. We have additional sample containers available from the set you provided, so we won't need those this time. Let me know if all this is acceptable for your laboratory. Thanks.

**Chris Johnson**  
Environmental Program Supervisor  
Water Sciences Section / Organic Chemistry Branch

North Carolina Department of Environmental Quality  
Division of Water Resources

919-733-3908 office

4405 Reedy Creek Road  
Raleigh, NC 27607

*Email correspondence to and from this address is subject to the  
North Carolina Public Records Law and may be disclosed to third parties.*

Linda Culpepper emails.txt

From: Strynar, Mark  
Sent: Thursday, July 06, 2017 4:22 PM  
To: Buckley, Timothy; Medina-Vera, Myriam  
Cc: McCord, James  
Subject: RE: Sampling

Not on my comments. Apparently Test America results were given to Chemours and they were surprised.

Mark

From: Buckley, Timothy  
Sent: Thursday, July 06, 2017 4:19 PM  
To: Strynar, Mark <Strynar.Mark@epa.gov>; Medina-Vera, Myriam  
<Medina-Vera.Myriam@epa.gov>  
Cc: McCord, James <mccord.james@epa.gov>  
Subject: RE: Sampling

Is he basing "high" levels on your comments or have they seen Test America results. Either way, I agree that we can accommodate. We need to talk about timeline and whether we report in batches.

Tim

Timothy J. Buckley, PhD  
Director of the Exposure Methods & Measurements Division  
National Exposure Research Laboratory  
109 TW Alexander Drive  
Research Triangle Park, NC 27711

Linda Culpepper emails.txt

Email: buckley.timothy@epa.gov <mailto:buckley.timothy@epa.gov>

URL: <http://www.epa.gov/heasd/staff/buckley.html>

Phone: (919) 541-2454 (O); FAX: -0239

(919) 308-3480 (C)

From: Strynar, Mark

Sent: Thursday, July 06, 2017 4:09 PM

To: Medina-Vera, Myriam <Medina-Vera.Myriam@epa.gov  
<mailto:Medina-Vera.Myriam@epa.gov> >; Buckley, Timothy <Buckley.Timothy@epa.gov  
<mailto:Buckley.Timothy@epa.gov> >

Cc: McCord, James <mccord.james@epa.gov <mailto:mccord.james@epa.gov> >

Subject: FW: Sampling

FYI,

I just got off of a call with Chris Johnson. It seems the NCDEQ people would like to do one more round of sampling per a request from Chemours. It seems that in the Week one sampling they were surprised by the high results. That would mean a week 4 sampling excursion mid to late next week at both Fayetteville and Wilmington locations. I told him we could handle the capacity but I would be away and those results may be delayed. I think James can handle it but I wanted to let you know. I don't see any reason why we cannot do these samples. It is still below the 50 we agreed we could do. I think we can still hit the deadline for the Week1-3 samples. Not sure about week number 4.

Thus I need to give Chris QC samples for Test America and for our efforts when he arrives tomorrow.

I will come to chat with you.

Mark

Linda Culpepper emails.txt

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]  
Sent: Thursday, July 06, 2017 3:02 PM  
To: Strynar, Mark <Strynar.Mark@epa.gov <mailto:Strynar.Mark@epa.gov> >  
Subject: Sampling

Mark, I just finished a call with Linda Culpepper and the Supervisors of the Fayetteville and Wilmington regional offices. We want to do one more sampling event for the Fayetteville sites (three sites) next week on Wednesday or Thursday. This is to get another result for the upstream sample since it was only done in weeks 2 and 3. Is that doable from your end? If so, we would need another set of the QC samples if you so desire. Samples will also be going to TestAmerica once again, so we would need a QC set for them as well. We have additional sample containers available from the set you provided, so we won't need those this time. Let me know if all this is acceptable for your laboratory. Thanks.

Chris Johnson

Environmental Program Supervisor

Water Sciences Section / Organic Chemistry Branch

North Carolina Department of Environmental Quality

Division of Water Resources

919-733-3908 office

4405 Reedy Creek Road

Raleigh, NC 27607

Linda Culpepper emails.txt

Email correspondence to and from this address is subject to the

North Carolina Public Records Law and may be disclosed to third parties.

From: Buckley, Timothy  
Sent: Thursday, July 06, 2017 4:19 PM  
To: Strynar, Mark; Medina-Vera, Myriam  
Cc: McCord, James  
Subject: RE: Sampling

Is he basing "high" levels on your comments or have they seen Test America results. Either way, I agree that we can accommodate. We need to talk about timeline and whether we report in batches.

Tim

Timothy J. Buckley, PhD

Director of the Exposure Methods & Measurements Division

National Exposure Research Laboratory

109 TW Alexander Drive

Research Triangle Park, NC 27711

Email: [buckley.timothy@epa.gov](mailto:buckley.timothy@epa.gov)

URL: <http://www.epa.gov/heasd/staff/buckley.html>

Phone: (919) 541-2454 (O); FAX: -0239

(919) 308-3480 (C)

From: Strynar, Mark  
Sent: Thursday, July 06, 2017 4:09 PM  
To: Medina-Vera, Myriam <[Medina-Vera.Myriam@epa.gov](mailto:Medina-Vera.Myriam@epa.gov)>; Buckley, Timothy <[Buckley.Timothy@epa.gov](mailto:Buckley.Timothy@epa.gov)>

Linda Culpepper emails.txt

Cc: McCord, James <mccord.james@epa.gov>

Subject: FW: Sampling

FYI,

I just got off of a call with Chris Johnson. It seems the NCDEQ people would like to do one more round of sampling per a request from Chemours. It seems that in the Week one sampling they were surprised by the high results. That would mean a week 4 sampling excursion mid to late next week at both Fayetteville and Wilmington locations. I told him we could handle the capacity but I would be away and those results may be delayed. I think James can handle it but I wanted to let you know. I don't see any reason why we cannot do these samples. It is still below the 50 we agreed we could do. I think we can still hit the deadline for the Week1-3 samples. Not sure about week number 4.

Thus I need to give Chris QC samples for Test America and for our efforts when he arrives tomorrow.

I will come to chat with you.

Mark

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]

Sent: Thursday, July 06, 2017 3:02 PM

To: Strynar, Mark <Strynar.Mark@epa.gov <mailto:Strynar.Mark@epa.gov> >

Subject: Sampling

Mark, I just finished a call with Linda Culpepper and the Supervisors of the Fayetteville and Wilmington regional offices. We want to do one more sampling event for the Fayetteville sites (three sites) next week on Wednesday or Thursday. This

Linda Culpepper emails.txt

is to get another result for the upstream sample since it was only done in weeks 2 and 3. Is that doable from your end? If so, we would need another set of the QC samples if you so desire. Samples will also be going to TestAmerica once again, so we would need a QC set for them as well. We have additional sample containers available from the set you provided, so we won't need those this time. Let me know if all this is acceptable for your laboratory. Thanks.

Chris Johnson

Environmental Program Supervisor

Water Sciences Section / Organic Chemistry Branch

North Carolina Department of Environmental Quality

Division of Water Resources

919-733-3908 office

4405 Reedy Creek Road

Raleigh, NC 27607

Email correspondence to and from this address is subject to the

North Carolina Public Records Law and may be disclosed to third parties.

From: Strynar, Mark  
Sent: Thursday, July 06, 2017 4:09 PM  
To: Medina-Vera, Myriam; Buckley, Timothy  
Cc: McCord, James  
Subject: FW: Sampling

FYI,

Linda Culpepper emails.txt

I just got off of a call with Chris Johnson. It seems the NCDEQ people would like to do one more round of sampling per a request from Chemours. It seems that in the Week one sampling they were surprised by the high results. That would mean a week 4 sampling excursion mid to late next week at both Fayetteville and Wilmington locations. I told him we could handle the capacity but I would be away and those results may be delayed. I think James can handle it but I wanted to let you know. I don't see any reason why we cannot do these samples. It is still below the 50 we agreed we could do. I think we can still hit the deadline for the Week1-3 samples. Not sure about week number 4.

Thus I need to give Chris QC samples for Test America and for our efforts when he arrives tomorrow.

I will come to chat with you.

Mark

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]  
Sent: Thursday, July 06, 2017 3:02 PM  
To: Strynar, Mark <Strynar.Mark@epa.gov>  
Subject: Sampling

Mark, I just finished a call with Linda Culpepper and the Supervisors of the Fayetteville and Wilmington regional offices. We want to do one more sampling event for the Fayetteville sites (three sites) next week on Wednesday or Thursday. This is to get another result for the upstream sample since it was only done in weeks 2 and 3. Is that doable from your end? If so, we would need another set of the QC samples if you so desire. Samples will also be going to TestAmerica once again, so we would need a QC set for them as well. We have additional sample containers available from the set you provided, so we won't need those this time. Let me know if all this is acceptable for your laboratory. Thanks.

Linda Culpepper emails.txt

Chris Johnson

Environmental Program Supervisor

Water Sciences Section / Organic Chemistry Branch

North Carolina Department of Environmental Quality

Division of Water Resources

919-733-3908 office

4405 Reedy Creek Road

Raleigh, NC 27607

Email correspondence to and from this address is subject to the  
North Carolina Public Records Law and may be disclosed to third parties.

From: Johnson, Chris <chris.johnson@ncdenr.gov>  
Sent: Thursday, July 06, 2017 4:06 PM  
To: Perez, Helen l  
Cc: Gregson, Jim; West, Steve; King, Morella s; Culpepper, Linda; Satterwhite, Dana; Strynar, Mark; Allen, Trent; Brantley, Mark; Karoly, Cyndi  
Subject: Sampling next week

I talked with Mark Strynar at EPA. They have agreed to accept another round of samples. I am going to take this week's samples over to them tomorrow once I receive the Wilmington set. They will prepare another QC set and I will get those to Wilmington, along with more sample bottles, via State courier on Monday. I believe Fayetteville has sufficient EPA sample bottles for one more round, but let me know if you don't.

Chris Johnson

Linda Culpepper emails.txt

Environmental Program Supervisor

Water Sciences Section / Organic Chemistry Branch

North Carolina Department of Environmental Quality

Division of Water Resources

919-733-3908 office

4405 Reedy Creek Road

Raleigh, NC 27607

Email correspondence to and from this address is subject to the  
North Carolina Public Records Law and may be disclosed to third parties.

From: Strynar, Mark  
Sent: Thursday, July 06, 2017 3:43 PM  
To: 'Johnson, Chris'  
Cc: McCord, James  
Subject: RE: Sampling

Chris,

I will be away on vacation from July 7-20th. However I think my post-doc can handle it. If not with the nitric acid spiking they are good for several weeks until I return.

So then do you need QCs for both my efforts and test America as I prepared last week blind to us both tomorrow??

Linda Culpepper emails.txt

Mark

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]  
Sent: Thursday, July 06, 2017 3:02 PM  
To: Strynar, Mark <Strynar.Mark@epa.gov>  
Subject: Sampling

Mark, I just finished a call with Linda Culpepper and the Supervisors of the Fayetteville and Wilmington regional offices. We want to do one more sampling event for the Fayetteville sites (three sites) next week on Wednesday or Thursday. This is to get another result for the upstream sample since it was only done in weeks 2 and 3. Is that doable from your end? If so, we would need another set of the QC samples if you so desire. Samples will also be going to TestAmerica once again, so we would need a QC set for them as well. We have additional sample containers available from the set you provided, so we won't need those this time. Let me know if all this is acceptable for your laboratory. Thanks.

Chris Johnson

Environmental Program Supervisor

Water Sciences Section / Organic Chemistry Branch

North Carolina Department of Environmental Quality

Division of Water Resources

919-733-3908 office

4405 Reedy Creek Road

Raleigh, NC 27607

Linda Culpepper emails.txt

Email correspondence to and from this address is subject to the  
North Carolina Public Records Law and may be disclosed to third parties.

From: Johnson, Chris <chris.johnson@ncdenr.gov>  
Sent: Thursday, July 06, 2017 3:02 PM  
To: Strynar, Mark  
Subject: Sampling

Mark, I just finished a call with Linda Culpepper and the Supervisors of the Fayetteville and Wilmington regional offices. We want to do one more sampling event for the Fayetteville sites (three sites) next week on Wednesday or Thursday. This is to get another result for the upstream sample since it was only done in weeks 2 and 3. Is that doable from your end? If so, we would need another set of the QC samples if you so desire. Samples will also be going to TestAmerica once again, so we would need a QC set for them as well. We have additional sample containers available from the set you provided, so we won't need those this time. Let me know if all this is acceptable for your laboratory. Thanks.

Chris Johnson

Environmental Program Supervisor

Water Sciences Section / Organic Chemistry Branch

North Carolina Department of Environmental Quality

Division of Water Resources

919-733-3908 office

4405 Reedy Creek Road

Raleigh, NC 27607

Linda Culpepper emails.txt

Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Lindstrom, Andrew  
Sent: Friday, June 30, 2017 9:06 AM  
To: Maddaloni, Mark; Buckley, Timothy; Strynar, Mark  
Subject: RE: PFAS in Cape Fear Drinking Water NC / R4 / NERL Collaboration  
Attachments: Resnik & Wing 2007.pdf

Tim,

Following up on Mark's comment here, I think we (EPA) need to quickly find out if OW is working on an HA for GenX and at least go public with the fact that they are/are not working on it. OW should be issuing a statement on this.

We need to take charge of the narrative. Did we learn anything form CHEERS?

Also, I think we need to participate in public briefings where we - the authors of the Sun et al. paper - answer questions with NC DEQ and other appropriate policy folks. If we don't do what we can to work with this community on this issue we will lose the trust of the people we serve.

I know we (at the NERL level) may not have much influence on these things. I'd just like to hear my management say the right thing.

Please let me know if I can help in any way.

Thank you,

Andy

From: Maddaloni, Mark  
Sent: Friday, June 30, 2017 8:42 AM  
To: Buckley, Timothy <Buckley.Timothy@epa.gov>; Strynar, Mark <Strynar.Mark@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; Medina-Vera, Myriam <Medina-Vera.Myriam@epa.gov>; Sivertsen, Scott <Sivertsen.Scott@epa.gov>; Johnson, Chris <chris.johnson@ncdenr.gov>; Allenbach, Becky <Allenbach.Becky@epa.gov>; linda.culpepper@ncdenr.gov; helen.perez@ncdenr.gov; nick.jones@ncdenr.gov; cyndi.karoly@ncdenr.gov; dana.satterwhite@ncdenr.gov; mark.brantley@ncdenr.gov; morella.sanchez-king@ncdenr.gov; Hall, Renea <Hall.Renea@epa.gov>; France, Danny <France.Danny@epa.gov>; Risen, Amy J <Amy.Risen@dhhs.nc.gov>; Shehee, Mina <mina.shehee@dhhs.nc.gov>; Langley, Rick <rick.langley@dhhs.nc.gov>; Sink, Marla <Marla.Sink@ncdenr.gov>; Munger, Bridget <bridget.munger@ncdenr.gov>; Smith, Emily J. <Smith.Emily@epa.gov>; Newton, Seth <Newton.Seth@epa.gov>; Maguire, Megan <Maguire.Megan@epa.gov>; Tong-Argao, Sania <Tong-Argao.Sania@epa.gov>  
Cc: Hubbard, Carolyn <Hubbard.Carolyn@epa.gov>; Gregson, Jim <jim.gregson@ncdenr.gov>  
Subject: RE: PFAS in Cape Fear Drinking Water NC / R4 / NERL Collaboration

Thanks, Tim. Will the "Communications Plan" include a discussion of health-based benchmarks for GenX in drinking water to compare sampling results against?

-----Original Appointment-----


From: Buckley, Timothy  
Sent: Thursday, June 29, 2017 5:14 PM  
To: Strynar, Mark; Lindstrom, Andrew; Medina-Vera, Myriam; Sivertsen, Scott; Johnson, Chris; Allenbach, Becky; linda.culpepper@ncdenr.gov <mailto:linda.culpepper@ncdenr.gov>; helen.perez@ncdenr.gov <mailto:helen.perez@ncdenr.gov>; nick.jones@ncdenr.gov <mailto:nick.jones@ncdenr.gov>; cyndi.karoly@ncdenr.gov <mailto:cyndi.karoly@ncdenr.gov>; dana.satterwhite@ncdenr.gov <mailto:dana.satterwhite@ncdenr.gov>; mark.brantley@ncdenr.gov <mailto:mark.brantley@ncdenr.gov>; morella.sanchez-king@ncdenr.gov <mailto:morella.sanchez-king@ncdenr.gov>; Maddaloni, Mark; Hall, Renea; France, Danny; Risen, Amy J; Shehee, Mina; Langley, Rick; Sink, Marla; Munger, Bridget; Smith, Emily J.; Newton, Seth; Maguire, Megan; Tong-Argao, Sania

Linda Culpepper emails.txt

Cc: Hubbard, Carolyn; Gregson, Jim

Subject: PFAS in Cape Fear Drinking Water NC / R4 / NERL Collaboration

When: Wednesday, July 05, 2017 2:30 PM-3:30 PM (UTC-05:00) Eastern Time (US & Canada).

Where: 

Feel free to offer additional agenda items if I have left something important out.

#### Agenda

- \* Sampling Update
  - o Addition of Fayetteville
  - o Samples delivered
  - o Samples analyzed
  - o Incorporation of performance standards
  - o Extending the sampling period
- \* QAPP Progress
  - o Sampling
  - o Laboratory
- \* Results status
- \* Communications Plan Status
- \* Scheduling next meeting

Notes / Follow-up from Linda Culpepper following 6/27 conference call

Follow up items from today's conf. call:

\* Regional staff have GPS coordinates for sampling locations. Will send an email with those from the Wilmington area. Mark - please send those for the Fayetteville area.

\* Mark Brantley knows we also want a sample from the City of Fayetteville water intake on Monday. Mark - appreciate you making arrangements in advance.

\* Chemours production staff will be onsite Monday July 3rd and production processes will be active, but some of the other staff will not be at the plant. Arrangements are being made for Mark to get access to outfall 002 for sampling. Test America will not be open July 4th. Due to their requirement to ice the samples, the samples from July 3rd will be held at the Fayetteville Regional Office in the lab refrigerator until Weds. July 5th at which time they will be shipped to Test America in ice. We will include that description in the QAPP and note on the Chain of Custody.

\* The sampling process at Chemours outfall 002 does involve using a dipper to collect the sample and then pour it into a container due to the access point being 6' above the outfall. The dipper is "rinsed" in outfall 002 effluent prior to sampling. We will include that description in the QAPP.

\* Chemours will pay for the trip blank, high spike and low spike analysis at Test America. Michael Aucoin, Chemours' AECOM consultant coordinating sampling for Chemours and the analysis for all the samples going to Test America, is talking with Test America about the subject EPA sample containers containing nitric acid. The sample kits DEQ received from Test America were not prepped with nitric acid. We will forward the response upon receipt.

\* Test America is only reporting results for GenX - HFPO dimer acid.

\* Chris Johnson brought up the concept of getting production samples from the site. Michael Johnson will ask his management. We let Michael know we were going to take the upriver sample and Chris indicated that sample will help us know what they may be bringing into the plant and help understand the effluent leaving the plant. Chris indicated having the production samples will help verify we are analyzing for the correct chemicals. Becky - know you were going to see if the EPA TSCA inspectors could/would take production process samplings. Wanted to give you a heads up about our conversation.

\* I will get refinement on DEQ and DHHS contacts for collaboration on future sampling/analysis concepts during our Weds morning call with DEQ & DHHS. Look forward to those planning discussions.

\* Jamie Kritzer, DEQ Public Affairs, is getting a Communications team meeting set with DEQ/DHHS/EPA contacts.

From: Maddaloni, Mark

Sent: Friday, June 30, 2017 8:42 AM

Linda Culpepper emails.txt

To: Buckley, Timothy; Strynar, Mark; Lindstrom, Andrew; Medina-Vera, Myriam; Sivertsen, Scott; Johnson, Chris; Allenbach, Becky; linda.culpepper@ncdenr.gov; helen.perez@ncdenr.gov; nick.jones@ncdenr.gov; cyndi.karoly@ncdenr.gov; dana.satterwhite@ncdenr.gov; mark.brantley@ncdenr.gov; morella.sanchez-king@ncdenr.gov; Hall, Renea; France, Danny; Risen, Amy J; Shehee, Mina; Langley, Rick; Sink, Marla; Munger, Bridget; Smith, Emily J.; Newton, Seth; Maguire, Megan; Tong-Argao, Sania  
Cc: Hubbard, Carolyn; Gregson, Jim  
Subject: RE: PFAS in Cape Fear Drinking Water NC / R4 / NERL Collaboration

Thanks, Tim. Will the "Communications Plan" include a discussion of health-based benchmarks for GenX in drinking water to compare sampling results against?

-----Original Appointment-----

From: Buckley, Timothy  
Sent: Thursday, June 29, 2017 5:14 PM  
To: Strynar, Mark; Lindstrom, Andrew; Medina-Vera, Myriam; Sivertsen, Scott; Johnson, Chris; Allenbach, Becky; linda.culpepper@ncdenr.gov; helen.perez@ncdenr.gov; nick.jones@ncdenr.gov; cyndi.karoly@ncdenr.gov; dana.satterwhite@ncdenr.gov; mark.brantley@ncdenr.gov; morella.sanchez-king@ncdenr.gov; Maddaloni, Mark; Hall, Renea; France, Danny; Risen, Amy J; Shehee, Mina; Langley, Rick; Sink, Marla; Munger, Bridget; Smith, Emily J.; Newton, Seth; Maguire, Megan; Tong-Argao, Sania  
Cc: Hubbard, Carolyn; Gregson, Jim  
Subject: PFAS in Cape Fear Drinking Water NC / R4 / NERL Collaboration  
When: Wednesday, July 05, 2017 2:30 PM-3:30 PM (UTC-05:00) Eastern Time (US & Canada).  
Where: [REDACTED]

Feel free to offer additional agenda items if I have left something important out.

Agenda

- \* Sampling Update
- o Addition of Fayetteville

Linda Culpepper emails.txt

- o Samples delivered
- o Samples analyzed
- o Incorporation of performance standards
- o Extending the sampling period
- \* QAPP Progress
- o Sampling
- o Laboratory
- \* Results status
- \* Communications Plan Status
- \* Scheduling next meeting

Notes / Follow-up from Linda Culpepper following 6/27 conference call

Follow up items from today's conf. call:

\* Regional staff have GPS coordinates for sampling locations. Will send an email with those from the Wilmington area. Mark - please send those for the Fayetteville area.

\* Mark Brantley knows we also want a sample from the City of Fayetteville water intake on Monday. Mark - appreciate you making arrangements in advance.

\* Chemours production staff will be onsite Monday July 3rd and production processes will be active, but some of the other staff will not be at the plant. Arrangements are being made for Mark to get access to outfall 002 for sampling. Test America will not be open July 4th. Due to their requirement to ice the samples, the samples from July 3rd will be held at the Fayetteville Regional Office in the lab refrigerator until Weds. July 5th at which time they will be shipped to Test America in ice. We will include that description in the QAPP and note on the Chain of Custody.

\* The sampling process at Chemours outfall 002 does involve using a dipper to collect the sample and then pour it into a container due to the access point being 6' above the outfall. The dipper is "rinsed" in outfall 002 effluent prior to sampling. We will include that description in the QAPP.

Linda Culpepper emails.txt

- \* Chemours will pay for the trip blank, high spike and low spike analysis at Test America. Michael Aucoin, Chemours' AECOM consultant coordinating sampling for Chemours and the analysis for all the samples going to Test America, is talking with Test America about the subject EPA sample containers containing nitric acid. The sample kits DEQ received from Test America were not prepped with nitric acid. We will forward the response upon receipt.
- \* Test America is only reporting results for GenX - HFPO dimer acid.
- \* Chris Johnson brought up the concept of getting production samples from the site. Michael Johnson will ask his management. We let Michael know we were going to take the upriver sample and Chris indicated that sample will help us know what they may be bringing into the plant and help understand the effluent leaving the plant. Chris indicated having the production samples will help verify we are analyzing for the correct chemicals. Becky - know you were going to see if the EPA TSCA inspectors could/would take production process samplings. Wanted to give you a heads up about our conversation.
- \* I will get refinement on DEQ and DHHS contacts for collaboration on future sampling/analysis concepts during our Weds morning call with DEQ & DHHS. Look forward to those planning discussions.
- \* Jamie Kritzer, DEQ Public Affairs, is getting a Communications team meeting set with DEQ/DHHS/EPA contacts.

From: Johnson, Chris <chris.johnson@ncdenr.gov>  
Sent: Thursday, June 29, 2017 3:04 PM  
To: Brantley, Mark  
Cc: Allen, Trent; Karoly, Cyndi; Satterwhite, Dana; Culpepper, Linda; Wiggins, Kent; Jones, Nick; Strynar, Mark  
Subject: Sample bottles

Mark, I picked up the latest set of QC samples from EPA this morning. I have them in a cooler heading your way. The courier picked them up at 1:00 today so you should see them tomorrow.

There are six empty bottles in case you need them. There are also six QC samples. Three of them have HNO<sub>3</sub> and three do not. The ones without acid are to be sent to TestAmerica in your next shipment to them. The three with acid are to come back to the EPA laboratory.

I think we had discussed sending the EPA cooler back with your last shipment, so you can just put everything for EPA in that cooler. Send back any bottles that you don't use since EPA reuses their bottles.

Linda Culpepper emails.txt

Let me know if I've left any needed info out. Thanks!

Chris Johnson

Environmental Program Supervisor

Water Sciences Section / Organic Chemistry Branch

North Carolina Department of Environmental Quality

Division of Water Resources

919-733-3908 office

4405 Reedy Creek Road

Raleigh, NC 27607

Email correspondence to and from this address is subject to the  
North Carolina Public Records Law and may be disclosed to third parties.

## Goode, Teresa

---

**From:** Strynar, Mark  
**Sent:** Thursday, July 06, 2017 4:22 PM  
**To:** Buckley, Timothy; Medina-Vera, Myriam  
**Cc:** McCord, James  
**Subject:** RE: Sampling

Not on my comments. Apparently Test America results were given to Chemours and they were surprised.

Mark

---

**From:** Buckley, Timothy  
**Sent:** Thursday, July 06, 2017 4:19 PM  
**To:** Strynar, Mark <Strynar.Mark@epa.gov>; Medina-Vera, Myriam <Medina-Vera.Myriam@epa.gov>  
**Cc:** McCord, James <mccord.james@epa.gov>  
**Subject:** RE: Sampling

Is he basing "high" levels on your comments or have they seen Test America results. Either way, I agree that we can accommodate. We need to talk about timeline and whether we report in batches.

Tim

Timothy J. Buckley, PhD  
Director of the Exposure Methods & Measurements Division  
National Exposure Research Laboratory  
109 TW Alexander Drive  
Research Triangle Park, NC 27711

Email: [buckley.timothy@epa.gov](mailto:buckley.timothy@epa.gov)  
URL: <http://www.epa.gov/heasd/staff/buckley.html>  
Phone: (919) 541-2454 (O); FAX: -0239  
(919) 308-3480 (C)

**From:** Strynar, Mark  
**Sent:** Thursday, July 06, 2017 4:09 PM  
**To:** Medina-Vera, Myriam <[Medina-Vera.Myriam@epa.gov](mailto:Medina-Vera.Myriam@epa.gov)>; Buckley, Timothy <[Buckley.Timothy@epa.gov](mailto:Buckley.Timothy@epa.gov)>  
**Cc:** McCord, James <[mccord.james@epa.gov](mailto:mccord.james@epa.gov)>  
**Subject:** FW: Sampling

FYI,

I just got off of a call with Chris Johnson. It seems the NCDEQ people would like to do one more round of sampling per a request from Chemours. It seems that in the Week one sampling they were surprised by the high results. That would mean a week 4 sampling excursion mid to late next week at both Fayetteville and Wilmington locations. I told him we could handle the capacity but I would be away and those results may be delayed. I think James can handle it but I wanted to let you know. I don't see any reason why we cannot do these samples. It is still below the 50 we agreed we could do. I think we can still hit the deadline for the Week1-3 samples. Not sure about week number 4.

Thus I need to give Chris QC samples for Test America and for our efforts when he arrives tomorrow.

I will come to chat with you.

Mark

**From:** Johnson, Chris [<mailto:chris.johnson@ncdenr.gov>]

**Sent:** Thursday, July 06, 2017 3:02 PM

**To:** Strynar, Mark <[Strynar.Mark@epa.gov](mailto:Strynar.Mark@epa.gov)>

**Subject:** Sampling

Mark, I just finished a call with Linda Culpepper and the Supervisors of the Fayetteville and Wilmington regional offices. We want to do one more sampling event for the Fayetteville sites (three sites) next week on Wednesday or Thursday. This is to get another result for the upstream sample since it was only done in weeks 2 and 3. Is that doable from your end? If so, we would need another set of the QC samples if you so desire. Samples will also be going to TestAmerica once again, so we would need a QC set for them as well. We have additional sample containers available from the set you provided, so we won't need those this time. Let me know if all this is acceptable for your laboratory. Thanks.

**Chris Johnson**

Environmental Program Supervisor

Water Sciences Section / Organic Chemistry Branch

North Carolina Department of Environmental Quality

Division of Water Resources

919-733-3908 office

4405 Reedy Creek Road

Raleigh, NC 27607

*Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.*

## Goode, Teresa

---

**From:** Buckley, Timothy  
**Sent:** Thursday, July 06, 2017 4:19 PM  
**To:** Strynar, Mark; Medina-Vera, Myriam  
**Cc:** McCord, James  
**Subject:** RE: Sampling

Is he basing "high" levels on your comments or have they seen Test America results. Either way, I agree that we can accommodate. We need to talk about timeline and whether we report in batches.

Tim

Timothy J. Buckley, PhD  
Director of the Exposure Methods & Measurements Division  
National Exposure Research Laboratory  
109 TW Alexander Drive  
Research Triangle Park, NC 27711

Email: [buckley.timothy@epa.gov](mailto:buckley.timothy@epa.gov)  
URL: <http://www.epa.gov/heasd/staff/buckley.html>  
Phone: (919) 541-2454 (O); FAX: -0239  
(919) 308-3480 (C)

**From:** Strynar, Mark  
**Sent:** Thursday, July 06, 2017 4:09 PM  
**To:** Medina-Vera, Myriam <[Medina-Vera.Myriam@epa.gov](mailto:Medina-Vera.Myriam@epa.gov)>; Buckley, Timothy <[Buckley.Timothy@epa.gov](mailto:Buckley.Timothy@epa.gov)>  
**Cc:** McCord, James <[mccord.james@epa.gov](mailto:mccord.james@epa.gov)>  
**Subject:** FW: Sampling

FYI,

I just got off of a call with Chris Johnson. It seems the NCDEQ people would like to do one more round of sampling per a request from Chemours. It seems that in the Week one sampling they were surprised by the high results. That would mean a week 4 sampling excursion mid to late next week at both Fayetteville and Wilmington locations. I told him we could handle the capacity but I would be away and those results may be delayed. I think James can handle it but I wanted to let you know. I don't see any reason why we cannot do these samples. It is still below the 50 we agreed we could do. I think we can still hit the deadline for the Week1-3 samples. Not sure about week number 4.

Thus I need to give Chris QC samples for Test America and for our efforts when he arrives tomorrow.

I will come to chat with you.

Mark

**From:** Johnson, Chris [<mailto:chris.johnson@ncdenr.gov>]  
**Sent:** Thursday, July 06, 2017 3:02 PM  
**To:** Strynar, Mark <[Strynar.Mark@epa.gov](mailto:Strynar.Mark@epa.gov)>  
**Subject:** Sampling

Mark, I just finished a call with Linda Culpepper and the Supervisors of the Fayetteville and Wilmington regional offices. We want to do one more sampling event for the Fayetteville sites (three sites) next week on Wednesday or Thursday. This is to get another result for the upstream sample since it was only done in weeks 2 and 3. Is that doable from your end? If so, we would need another set of the QC samples if you so desire. Samples will also be going to TestAmerica once again, so we would need a QC set for them as well. We have additional sample containers available from the set you provided, so we won't need those this time. Let me know if all this is acceptable for your laboratory. Thanks.

**Chris Johnson**

Environmental Program Supervisor  
Water Sciences Section / Organic Chemistry Branch

North Carolina Department of Environmental Quality  
Division of Water Resources

919-733-3908 office

4405 Reedy Creek Road  
Raleigh, NC 27607

*Email correspondence to and from this address is subject to the  
North Carolina Public Records Law and may be disclosed to third parties.*

**Goode, Teresa**

---

**From:** Strynar, Mark  
**Sent:** Thursday, July 06, 2017 3:43 PM  
**To:** Johnson, Chris  
**Cc:** McCord, James  
**Subject:** RE: Sampling

Chris,

I will be away on vacation from July 7-20<sup>th</sup>. However I think my post-doc can handle it. If not with the nitric acid spiking they are good for several weeks until I return.

So then do you need QCs for both my efforts and test America as I prepared last week blind to us both tomorrow??

Mark

**From:** Johnson, Chris [mailto:chris.johnson@ncdenr.gov]  
**Sent:** Thursday, July 06, 2017 3:02 PM  
**To:** Strynar, Mark <Strynar.Mark@epa.gov>  
**Subject:** Sampling

Mark, I just finished a call with Linda Culpepper and the Supervisors of the Fayetteville and Wilmington regional offices. We want to do one more sampling event for the Fayetteville sites (three sites) next week on Wednesday or Thursday. This is to get another result for the upstream sample since it was only done in weeks 2 and 3. Is that doable from your end? If so, we would need another set of the QC samples if you so desire. Samples will also be going to TestAmerica once again, so we would need a QC set for them as well. We have additional sample containers available from the set you provided, so we won't need those this time. Let me know if all this is acceptable for your laboratory. Thanks.

**Chris Johnson**  
Environmental Program Supervisor  
Water Sciences Section / Organic Chemistry Branch

North Carolina Department of Environmental Quality  
Division of Water Resources

919-733-3908 office

4405 Reedy Creek Road  
Raleigh, NC 27607

*Email correspondence to and from this address is subject to the  
North Carolina Public Records Law and may be disclosed to third parties.*

**Goode, Teresa**

---

**From:** Johnson, Chris <chris.johnson@ncdenr.gov>  
**Sent:** Thursday, June 29, 2017 3:04 PM  
**To:** Brantley, Mark  
**Cc:** Allen, Trent; Karoly, Cyndi; Satterwhite, Dana; Culpepper, Linda; Wiggins, Kent; Jones, Nick; Strynar, Mark  
**Subject:** Sample bottles

Mark, I picked up the latest set of QC samples from EPA this morning. I have them in a cooler heading your way. The courier picked them up at 1:00 today so you should see them tomorrow.

There are six empty bottles in case you need them. There are also six QC samples. Three of them have HNO<sub>3</sub> and three do not. The ones without acid are to be sent to TestAmerica in your next shipment to them. The three with acid are to come back to the EPA laboratory.

I think we had discussed sending the EPA cooler back with your last shipment, so you can just put everything for EPA in that cooler. Send back any bottles that you don't use since EPA reuses their bottles.

Let me know if I've left any needed info out. Thanks!

**Chris Johnson**  
Environmental Program Supervisor  
Water Sciences Section / Organic Chemistry Branch

North Carolina Department of Environmental Quality  
Division of Water Resources

919-733-3908 office

4405 Reedy Creek Road  
Raleigh, NC 27607

*Email correspondence to and from this address is subject to the  
North Carolina Public Records Law and may be disclosed to third parties.*

**Goode, Teresa**

---

**From:** Johnson, Chris <chris.johnson@ncdenr.gov>  
**Sent:** Thursday, July 06, 2017 4:06 PM  
**To:** Perez, Helen I  
**Cc:** Gregson, Jim; West, Steve; King, Morella s; Culpepper, Linda; Satterwhite, Dana; Strynar, Mark; Allen, Trent; Brantley, Mark; Karoly, Cyndi  
**Subject:** Sampling next week

I talked with Mark Strynar at EPA. They have agreed to accept another round of samples. I am going to take this week's samples over to them tomorrow once I receive the Wilmington set. They will prepare another QC set and I will get those to Wilmington, along with more sample bottles, via State courier on Monday. I believe Fayetteville has sufficient EPA sample bottles for one more round, but let me know if you don't.

**Chris Johnson**  
Environmental Program Supervisor  
Water Sciences Section / Organic Chemistry Branch

North Carolina Department of Environmental Quality  
Division of Water Resources

919-733-3908 office

4405 Reedy Creek Road  
Raleigh, NC 27607

*Email correspondence to and from this address is subject to the  
North Carolina Public Records Law and may be disclosed to third parties.*

## Goode, Teresa

---

**From:** Strynar, Mark  
**Sent:** Wednesday, May 31, 2017 3:49 PM  
**To:** Detlef R. U. Knappe; Lindstrom, Andrew  
**Subject:** RE: [SPAM] More thoughts

The GenX is also known as the HPFO-DA or dimer acid. It is very possible apparently (based on a paper I am reviewing out of China, the HPFO-TA trimer acid also exists). I don't see it in the Chemours outfall.

What we really do NOT know is what is the compound referred to as the PPA or polymer processing aid? If it is not GenX then what is it they are making?

Mark

-----Original Message-----

From: Detlef Knappe [mailto:knappe@ncsu.edu]  
Sent: Wednesday, May 31, 2017 9:47 AM  
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; Strynar, Mark <Strynar.Mark@epa.gov>  
Subject: [SPAM] More thoughts

I was just looking at this page from Wellington:

[http://www.well-labs.com/docs/hfpoda\\_m3hfpoda\\_20feb2013\\_wellington\\_reporter.pdf](http://www.well-labs.com/docs/hfpoda_m3hfpoda_20feb2013_wellington_reporter.pdf)

Could GenX acid be a byproduct of the first process area on page 33 of the permit renewal application I sent yesterday? HFPO is specifically listed as a monomer for that area.

Detlef

--

Detlef Knappe  
Professor  
319-E Mann Hall  
Department of Civil, Construction, and Environmental Engineering North Carolina State University Campus Box 7908  
Raleigh, NC 27695-7908

Phone: 919-515-8791  
Fax: 919-515-7908  
E-mail: [knappe@ncsu.edu](mailto:knappe@ncsu.edu)  
Web page: <http://knappelab.wordpress.ncsu.edu/>

**Goode, Teresa**

---

**From:** Mark Strynar <markstrynar@gmail.com>  
**Sent:** Tuesday, June 13, 2017 7:40 AM  
**To:** Strynar, Mark; Lindstrom, Andrew  
**Subject:** Fwd: Consent order

Detlef,

I am not sure. They say they are making GenX there. How can it be considered a byproduct of HFPO?

----- Forwarded message -----

From: "Detlef Knappe" <[knappe@ncsu.edu](mailto:knappe@ncsu.edu)>  
Date: Jun 11, 2017 2:36 PM  
Subject: Consent order  
To: <[markstrynar@gmail.com](mailto:markstrynar@gmail.com)>  
Cc:

Mark,

The reporter found this:

"Found this little nugget in the EPA consent order:

(3) Byproducts. The requirements of this Order do not apply to the PMN substances when they are produced, without separate commercial intent, only as a "byproduct" as defined at 40 CFR 720.3(d) and in compliance with 40 CFR 720.30(g).

Here are those federal register entries:

40 CFR 720.3(d) Byproduct means a chemical substance produced without a separate commercial intent during the manufacture, processing, use, or disposal of another chemical substance or mixture.

40 CFR 720.30(g) Any byproduct if its only commercial purpose is for use by public or private organizations that (1) burn it as a fuel, (2) dispose of it as a waste, including in a landfill or for enriching soil, or (3) extract component chemical substances from it for commercial purposes. (This exclusion only applies to the byproduct; it does not apply to the component substances extracted from the byproduct.)"

My question: If GenX (the PMN substance) is produced as a byproduct (for example in their HFPO area), the capture requirement does not apply???

Detlef

--

Detlef Knappe  
Professor  
319-E Mann Hall  
Department of Civil, Construction, and Environmental Engineering  
North Carolina State University  
Campus Box 7908

Raleigh, NC 27695-7908

Phone: [919-515-8791](tel:919-515-8791)

Fax: [919-515-7908](tel:919-515-7908)

E-mail: [knappe@ncsu.edu](mailto:knappe@ncsu.edu)

Web page: <http://knappelab.wordpress.ncsu.edu/>

**Goode, Teresa**

---

**From:** Mark Strynar <markstrynar@gmail.com>  
**Sent:** Tuesday, June 13, 2017 7:40 AM  
**To:** Strynar, Mark; Lindstrom, Andrew  
**Subject:** Fwd: Consent order

Detlef,

I am not sure. They say they are making GenX there. How can it be considered a byproduct of HFPO?

----- Forwarded message -----

From: "Detlef Knappe" <[knappe@ncsu.edu](mailto:knappe@ncsu.edu)>  
Date: Jun 11, 2017 2:36 PM  
Subject: Consent order  
To: <[markstrynar@gmail.com](mailto:markstrynar@gmail.com)>  
Cc:

Mark,

The reporter found this:

"Found this little nugget in the EPA consent order:

(3) Byproducts. The requirements of this Order do not apply to the PMN substances when they are produced, without separate commercial intent, only as a "byproduct" as defined at 40 CFR 720.3(d) and in compliance with 40 CFR 720.30(g).

Here are those federal register entries:

40 CFR 720.3(d) Byproduct means a chemical substance produced without a separate commercial intent during the manufacture, processing, use, or disposal of another chemical substance or mixture.

40 CFR 720.30(g) Any byproduct if its only commercial purpose is for use by public or private organizations that (1) burn it as a fuel, (2) dispose of it as a waste, including in a landfill or for enriching soil, or (3) extract component chemical substances from it for commercial purposes. (This exclusion only applies to the byproduct; it does not apply to the component substances extracted from the byproduct.)"

My question: If GenX (the PMN substance) is produced as a byproduct (for example in their HFPO area), the capture requirement does not apply???

Detlef

--

Detlef Knappe  
Professor  
319-E Mann Hall  
Department of Civil, Construction, and Environmental Engineering  
North Carolina State University  
Campus Box 7908

Raleigh, NC 27695-7908

Phone: [919-515-8791](tel:919-515-8791)

Fax: [919-515-7908](tel:919-515-7908)

E-mail: [knappe@ncsu.edu](mailto:knappe@ncsu.edu)

Web page: <http://knappelab.wordpress.ncsu.edu/>

## Goode, Teresa

---

**From:** Strynar, Mark  
**Sent:** Wednesday, May 31, 2017 3:49 PM  
**To:** Detlef R. U. Knappe; Lindstrom, Andrew  
**Subject:** RE: [SPAM] More thoughts

The GenX is also known as the HPFO-DA or dimer acid. It is very possible apparently (based on a paper I am reviewing out of China, the HPFO-TA trimer acid also exists). I don't see it in the Chemours outfall.

What we really do NOT know is what is the compound referred to as the PPA or polymer processing aid? If it is not GenX then what is it they are making?

Mark

-----Original Message-----

**From:** Detlef Knappe [mailto:knappe@ncsu.edu]  
**Sent:** Wednesday, May 31, 2017 9:47 AM  
**To:** Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; Strynar, Mark <Strynar.Mark@epa.gov>  
**Subject:** [SPAM] More thoughts

I was just looking at this page from Wellington:

[http://www.well-labs.com/docs/hfpoda\\_m3hfpoda\\_20feb2013\\_wellington\\_reporter.pdf](http://www.well-labs.com/docs/hfpoda_m3hfpoda_20feb2013_wellington_reporter.pdf)

Could GenX acid be a byproduct of the first process area on page 33 of the permit renewal application I sent yesterday? HFPO is specifically listed as a monomer for that area.

Detlef

--

Detlef Knappe  
Professor  
319-E Mann Hall  
Department of Civil, Construction, and Environmental Engineering North Carolina State University Campus Box 7908  
Raleigh, NC 27695-7908

Phone: 919-515-8791  
Fax: 919-515-7908  
E-mail: [knappe@ncsu.edu](mailto:knappe@ncsu.edu)  
Web page: <http://knappelab.wordpress.ncsu.edu/>

## Goode, Teresa

---

**From:** LEUNG, LAM-WING H <LAM.H.LEUNG-1@chemours.com>  
**Sent:** Tuesday, August 04, 2015 10:48 PM  
**To:** Strynar, Mark  
**Subject:** RE: Catching Up  
**Attachments:** removed.txt

Hi Mark,

Thanks for your response and I'm certain that Yellowstone was way better and one of these days I hope I'd get to visit.

Couple of interesting things at FLUOROS were the total F analysis which is along the line with non-targeted analysis and the interest in "new generation" alternative processing aid (HFPO-DA falls into this category). You probably are aware of the recent paper in ES&T by Heydebreck et al dealing with HFPO-DA in China and Europe rivers. They presented a poster on this at FLUOROS and I had a fruitful discussion with the author and we can discuss this more if you have a chance.

I'd be extremely interested in what your findings as to the levels of HFPO-DA and what other compounds are present in your most recent samples.

Hopefully, the revised edition of your paper will be accepted and I do look forward to reading it.

Best,  
Lam

**Lam Leung, Ph.D.**  
Technical Fellow

[lam.h.leung-1@chemours.com](mailto:lam.h.leung-1@chemours.com)

302 695 6652 o  
302 985 1655 m

**The Chemours Company**  
Experimental Station 402/5323

200 Powder Mill Road  
Wilmington, DE 19803

USA



[LinkedIn](#) | [Twitter](#) | [Chemours.com](#)

**From:** Strynar, Mark [mailto:Strynar.Mark@epa.gov]  
**Sent:** Tuesday, August 04, 2015 1:20 PM  
**To:** LEUNG, LAM-WING H  
**Subject:** RE: Catching Up

Hi Lam,

Yellowstone was very nice. I was sad to miss FLUOROS but Yellowstone was way better I am sure.

We have been working with Detlef since around 2012 or so. Only recently has he expressed interest in the chemicals we found in the Cape Fear river. We began collecting samples back in 2012, however we have regularly collected samples over the past 3 years as follow-ups or to get new fresh samples. We saw that the effluent stream that used to be below the lock and dam is no longer in use. I spoke with the plant manager around 1 year ago and he had informed me the effluent process had changed as well. As we do not quantitate I could not say if levels have dropped. We simply stuck to the identification angle. I can tell based on area counts levels have decreased since my first samples were taken.

We did get feedback from the editor about two weeks ago. This is the second revision and I hope to have it resubmitted by the end of the week. I still intend to share the paper with you as soon as it is accepted.

We took some new samples last week in the Fayetteville area that I have yet to process. I will let you know what we see. The only compound we can actually quantitate for is the C<sub>6</sub>H<sub>5</sub>F<sub>11</sub>O<sub>3</sub> (CAS 13252-13-6) as we have an authentic standard for it. In addition Wellington labs now has an <sup>13</sup>C-labeled version of it (called M3HFPO-DA). All I could really say is relative abundance have changed if at all via comparisons. In addition, I am really more interested in presence studies right now.

Mark

Dr. Mark J. Strynar  
US EPA  
Physical Scientist  
919-541-3706  
[strynar.mark@epa.gov](mailto:strynar.mark@epa.gov)

**From:** LEUNG, LAM-WING H [<mailto:LAM.H.LEUNG-1@chemours.com>]  
**Sent:** Tuesday, August 04, 2015 11:03 AM  
**To:** Strynar, Mark  
**Subject:** Catching Up

Hi Mark,

I hope you and your family had a great vacation at Yellow Stone (I recall you were heading there) and the summer is going well for you. We missed you at FLUOROS2015 and it was an excellent conference and very informative and educational. Although it was a long 2 day conference, I do find it to be just the proper length to catch up on new things and meeting new researchers.

I spoke with Detlef Knappe and his postdoc Mei Sun of NC State about their poster (I was not aware of that you were collaborating with him) and it was quite interesting. I'm more particular interest in when the samples were collected as we've implemented some changes in our facility some time in 2014. There are, of course, a few other interesting posters which I found to be quite interesting and I'm not sure you have a chance to look over the abstract that Chris sent out.

By the way, has your paper got accepted as I recall you had just received some feedback from the editor back in June?

P.S. We are now a "new" company and are totally separated from DuPont although I'm doing pretty much exactly what I have been doing the past few years.

Best Regards,  
Lam

**Lam Leung, Ph.D.**  
Technical Fellow

[lam.h.leung-1@chemours.com](mailto:lam.h.leung-1@chemours.com)

302 695 6652 o  
302 985 1655 m

**The Chemours Company**  
Experimental Station 402/5323

200 Powder Mill Road  
Wilmington, DE 19803

USA



[LinkedIn](#) | [Twitter](#) | [Chemours.com](#)

This communication is for use by the intended recipient and contains information that may be Privileged, confidential or copyrighted under applicable law. If you are not the intended recipient, you are hereby formally notified that any use, copying or distribution of this e-mail, in whole or in part, is strictly prohibited. Please notify the sender by return e-mail and delete this e-mail from your system. Unless explicitly and conspicuously designated as "E-Contract Intended. This e-mail does not constitute a contract offer, a contract amendment, or an acceptance of a contract offer. This e-mail does not constitute a consent to the use of sender's contact information for direct marketing purposes or for transfers of data to third parties.

Francais Deutsch Italiano Espanol Portugues Japanese Chinese Korean

[https://www.chemours.com/Chemours\\_Home/en\\_US/email\\_disclaimer.html](https://www.chemours.com/Chemours_Home/en_US/email_disclaimer.html)

This communication is for use by the intended recipient and contains information that may be Privileged, confidential or copyrighted under applicable law. If you are not the intended recipient, you are hereby formally notified that any use, copying or distribution of this e-mail, in whole or in part, is strictly prohibited. Please notify the sender by return e-mail and delete this e-mail from your system. Unless explicitly and conspicuously designated as "E-Contract Intended. This e-mail does not constitute a contract offer, a contract amendment, or an acceptance of a contract offer. This e-mail does not constitute a consent to the use of sender's contact information for direct marketing purposes or for transfers of data to third parties.

Francais Deutsch Italiano Espanol Portugues Japanese Chinese Korean



## Goode, Teresa

---

**From:** Strynar, Mark  
**Sent:** Monday, August 29, 2016 9:27 AM  
**To:** DeWitt, Jamie  
**Subject:** RE: Dewitt 363

Jamie,

I recently came across this paper concerning the toxicology of the GenX in the rat. We should likely add it.

Evaluation of chronic toxicity and carcinogenicity of ammonium 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)-propanoate in Sprague–Dawley rats J.M. Caverly Rae, Lisa Craig, Theodore W. Slone, Steven R. Frame, L. William Buxton, Gerald L. Kennedy

journal ISSN : 2214-7500

DOI 10.1016/j.toxrep.2015.06.001

Second, on the naming of the compound.

Both of the Gannon and Rae papers call the compound ammonium 2,3,3,3-Tetrafluoro-2-(heptafluoropropoxy)propanoic acid. In the ammonium salt form it is CAS 62037-80-6 and in the free acid form it is CAS 13252-13-6 (U2M3OHxane). We bought it in the free acid form (<http://www.synquestlabs.com/product/id/18551.html>)

Wellington calls it HFPO-DA (tetrafluoro-2-(heptafluoropropoxy) propanoic acid.

[http://www.well-labs.com/docs/adona\\_and\\_f53b\\_15aug2016\\_wellington\\_reporter.pdf](http://www.well-labs.com/docs/adona_and_f53b_15aug2016_wellington_reporter.pdf)

Mark

---

**From:** DeWitt, Jamie [mailto:DEWITTJ@ecu.edu]  
**Sent:** Monday, August 29, 2016 9:04 AM  
**To:** Strynar, Mark  
**Subject:** RE: Dewitt 363

Hi Mark,

In case Seth is interested:

-I made all of his suggested edits to the manuscript. I changed U2M3-OHxA to just U2M3. I'm not comfortable using the trade name throughout the paper, so wanted to keep it generic.

-I fixed the huge typo regarding dosing! Very good catch on that. It's listed properly in all of our protocols; I just must have spaced when putting together the paper.

-Regarding significant digits on the figures – it is standard/allowable to add one additional significant figure to a mean value. For example, we weighed to the 10<sup>th</sup>, so it is acceptable to report a mean to the 100<sup>th</sup>. I did reduce sig. figs. on the peroxisome proliferation figure and the serum/urine figures, but kept them at two for the other figures.

-It is standard to report log2 values for serum titers; for an explanation, I would refer Seth to the methods detailing that procedure. Here's that section of the methods: IgM anti-body titers were processed using SOFTmax Pro software

(Molecular Devices, LLC, Sunnyvale, CA) to determine the log<sub>2</sub> serum titers for an optical density of 0.5 U from the log-log curve of optical density versus dilution, as described by Temple et al. (1995).

-I kept serum and urine concentrations at ng/mL to remain consistent with reports of PFASs in human serum.

As soon as we get the other reviewer's comments back and I make the suggested changes, this baby will get submitted!

Jamie

---

**From:** Strynar, Mark [<mailto:Strynar.Mark@epa.gov>]

**Sent:** Thursday, August 25, 2016 8:27 AM

**To:** DeWitt, Jamie <[DEWITTJ@ecu.edu](mailto:DEWITTJ@ecu.edu)>

**Subject:** FW: Dewitt 363

Jamie,

Here is the first of the internal reviews of the manuscript. I am awaiting Andy's comments.

Mark

---

**From:** Newton, Seth

**Sent:** Thursday, August 25, 2016 7:11 AM

**To:** Strynar, Mark <[Strynar.Mark@epa.gov](mailto:Strynar.Mark@epa.gov)>

**Subject:** Dewitt 363

Mark,

Attached are my signed 363, comments on the manuscript, and a few comments on the figures. The comments are minor but please tell the authors to check the math on the dosing solution as my calculations put the doses 100x lower than what they should be.

Cheers,  
Seth

US EPA  
ORD/NERL/CED/HEDM  
Research Triangle Park  
919-541-5170  
[Newton.Seth@epa.gov](mailto:Newton.Seth@epa.gov)

**Goode, Teresa**

---

**From:** Martin, Allen (Wilmington) <Allen.Martin@sgs.com>  
**Sent:** Wednesday, July 05, 2017 9:51 AM  
**To:** Strynar, Mark  
**Subject:** RE: DoD Workshop Colorado

Good Morning Mark,

I have just one more quick question for you. I am definitely getting formation of the dimer which is by far the predominant mass. How are you quantifying your results for this compound? What little I have seen in the literature they are measuring a single m/z at 328. I'm wondering if it would be best to quantify each mass and sum the results.

Thank you again for your help.

Allen

---

**From:** Strynar, Mark [mailto:Strynar.Mark@epa.gov]  
**Sent:** Wednesday, June 21, 2017 1:13 PM  
**To:** Martin, Allen (Wilmington)  
**Subject:** RE: DoD Workshop Colorado

Run it in negative mode. You will get much better response.

Good luck.

Mark

**From:** Martin, Allen (Wilmington) [mailto:Allen.Martin@sgs.com]  
**Sent:** Wednesday, June 21, 2017 10:50 AM  
**To:** Strynar, Mark <Strynar.Mark@epa.gov>  
**Subject:** RE: DoD Workshop Colorado

Mark,

Thank you, this is a lot of good information.

I have just recently, this week, started looking at the compound. I ordered the ammonium salt from Synquest. I didn't realize that Wellington had versions available as well, thank you for that.

I'm running by LC-MS/MS and I've had success so far in positive mode only with a parent m/z of 329.94 and a daughter at 288.91.

Thanks

Allen

**Allen Martin**

**Environment, Health & Safety**

Method Development Manager

SGS North America

5500 Business Dr.

Wilmington, NC 28405-8446

Phone: +1 (910) 350-1903

Toll Free: +1 (866) 846-8290

Fax: +1 (910) 350-1557

E-mail: [allen.martin@sgs.com](mailto:allen.martin@sgs.com)

---

**From:** Strynar, Mark [<mailto:Strynar.Mark@epa.gov>]

**Sent:** Wednesday, June 21, 2017 8:41 AM

**To:** Martin, Allen (Wilmington)

**Subject:** RE: DoD Workshop Colorado

Hi Martin,

We have been using a method we developed for other PFAS dating back from the attached paper (Nakayama et al., 2010) for some time. I am starting a full method validation of GenX (and associated polyfluoroether compounds) in DI, surface and wastewater for dissemination in the literature. One modification is we use a slightly different elution solvent (0.03% NH<sub>4</sub>OH in methanol instead of MTBE/Methanol with NH<sub>4</sub>OH)

I have purchased the GenX from Synquest as the free acid [http://synquestlabs.com/search-result.html?q=C6HF11O3&st=\\*&commit=Search](http://synquestlabs.com/search-result.html?q=C6HF11O3&st=*&commit=Search)

Wellington now has a stable isotope labeled version of GenX (they call it HFPO-DA for the hexafluoropropyl oxide dimer-acid) M+3 and the native version available [http://www.well-labs.com/docs/hfpoda\\_m3hfpoda\\_20feb2013\\_wellington\\_reporter.pdf](http://www.well-labs.com/docs/hfpoda_m3hfpoda_20feb2013_wellington_reporter.pdf)

One difficulty we ran into is on our TOFMS in EI and on our MS/MS this compound appears to want to form in source gas phase dimers (nominal mass m/z 658 and 680 for the proton dimer and the sodium dimer respectively). I am sure if you had ammonium in your system as a buffer component it is there as well.

Thus you should look for the M-H m/z 328, 2M-H+H 658 and 2M-H+Na 680 when developing methods to assure best sensitivity. Second I would recommend a full rinse of the sampling vessel with methanol (10 mL for a 1000 mL bottle) once the water sample is poured out of the sampling bottle, then after rinsing poured back in with the methanol

rinse. We have been doing this for many years to assure good recovery of the PFAS in the sample. When cooled or shipped cold this is worsened. This helps get repeatable and optimized PFAS recovery.

Mark

---

**From:** Martin, Allen (Wilmington) [<mailto:Allen.Martin@sgs.com>]  
**Sent:** Tuesday, June 20, 2017 9:15 AM  
**To:** Strynar, Mark <[Strynar.Mark@epa.gov](mailto:Strynar.Mark@epa.gov)>  
**Subject:** RE: DoD Workshop Colorado

Good Morning Mark,

I know it's been quite a while but I did want to follow up. With regards to the carryover: I performed a full flush of the LC, replaced the injection port and all of the connections going to the injection port. Problem was finally resolved. I suspect it was the injection port but didn't full resolve the carryover until I replaced all the connections as well.

When you have time I wanted to touch base with you on this Genx. When I was performing some background research I ran across your name a few times. I purchased the ammonium salt of the compound and have just started the analytical side of it. I was just wondering if you had any tips or ran into any difficulties during your analysis.

Thanks again,  
Allen

**Allen Martin**  
**Environment, Health & Safety**  
Method Development Manager

SGS North America  
5500 Business Dr.  
Wilmington, NC 28405-8446

Phone: +1 (910) 350-1903  
Toll Free: +1 (866) 846-8290  
Fax: +1 (910) 350-1557  
E-mail: [allen.martin@sgs.com](mailto:allen.martin@sgs.com)

---

**From:** Strynar, Mark [<mailto:Strynar.Mark@epa.gov>]  
**Sent:** Tuesday, January 24, 2017 11:01 AM  
**To:** Martin, Allen (Wilmington)  
**Subject:** RE: DoD Workshop Colorado

No problem Martin. Let me know what you find out. It is always good to know the cause or solution.

Cheers,

Mark

---

**From:** Martin, Allen (Wilmington) [<mailto:Allen.Martin@sgs.com>]

**Sent:** Tuesday, January 24, 2017 10:56 AM

**To:** Strynar, Mark <[Strynar.Mark@epa.gov](mailto:Strynar.Mark@epa.gov)>

**Subject:** RE: DoD Workshop Colorado

It's a Waters Acquity H-Class system. I've had my eye on the sample loop, I'll give it a good cleaning. We have only done method development on it so far, so it really hasn't seen any nasty samples. That's why I'm somewhat surprised to be having this issue.

Thank you for your help and time, it's much appreciated.

Allen

---

**From:** Strynar, Mark [<mailto:Strynar.Mark@epa.gov>]

**Sent:** Tuesday, January 24, 2017 10:38 AM

**To:** Martin, Allen (Wilmington)

**Subject:** RE: DoD Workshop Colorado

Who is the equipment manufacturer? I have had some issues with the rotor seal for the switching valve being a holdup issue on my Agilent 1100. It acts as a sorption site and compounds can come off at later injections due to matrix buildup over time. In addition the needle loop can become contaminated as well and have active sites. Not sure if you do any biological samples or really dirty environmental samples (wastewater) but both can dirty these sites. To solve the first just change the switching valve seal. For the second you can pump and aggressive solvent such as methanol with 1% formic acid through it while sonicating. To do so I get a second pump setup and take the sample loop offline. I pump the solvent through the loop while the loop is in a beaker with the same solvent in a sonic bath. I then put everything back on the instrument and pump IPA through the whole system (without column) on the A and B solvent side at a low flow and do lots of short run injections so the needle loop, stator for injection and the needle and seat all get used. Last flush with your usual mobile phase and recheck.

Hope this helps.

Mark

**From:** Martin, Allen (Wilmington) [<mailto:Allen.Martin@sgs.com>]  
**Sent:** Tuesday, January 24, 2017 9:43 AM  
**To:** Strynar, Mark <[Strynar.Mark@epa.gov](mailto:Strynar.Mark@epa.gov)>  
**Subject:** RE: DoD Workshop Colorado

Hey Mark,

Thank you for the response. I notice it right after I inject a CCV, which is set at the mid-point of my calibration. I'm getting a consistent confirmation ion as well. I've tried running a CCV followed by several solvent blanks and it does diminish. I replaced the needle and needle seal, thinking maybe it was worn. That didn't really affect the carryover at all. I'm wondering if it could be sticking in the injection port.

Allen

---

**From:** Strynar, Mark [<mailto:Strynar.Mark@epa.gov>]  
**Sent:** Tuesday, January 24, 2017 7:32 AM  
**To:** Martin, Allen (Wilmington)  
**Subject:** RE: DoD Workshop Colorado

Hi Allen,

I have not had any issue with that compound however let me ask you a few questions to help assess this carry-over. It could just be a systemic contaminant somewhere.

Do you have any injections when you do not see a peak response? For instance when you inject a solvent blank do you see a response for the C14 compound.

Do you see this response after a high standard or sample?

Do you see a response in both the quantitative and confirmation ion (ie ion ratio consistent)? Sometime we have seen a response for one ion but not the other, it may be a similar mass if that is the case.

A few things I do to trouble shoot is a do a few injections of a solvent blank (starting composition of your mobile phase) and check if the response of the carryover is consistent or diminishing. Then I do a few non-injections (either run your gradient with no injection OR put an empty vial in the vial position and inject 1 uL of air). I then compare these two. If it is a contaminant from your LC caps or vials this will help assess the cause.

Get back to me and we can chat if you would like.

Mark

**From:** Martin, Allen (Wilmington) [<mailto:Allen.Martin@sgs.com>]  
**Sent:** Monday, January 23, 2017 10:44 AM  
**To:** Strynar, Mark <[Strynar.Mark@epa.gov](mailto:Strynar.Mark@epa.gov)>  
**Subject:** DoD Workshop Colorado

Good Morning Mark,

My name is Allen Martin, we met at the DoD workshop in Colorado last month. I enjoyed your presentation, it was very informative. I have a quick question. Have you ever had any issues with carryover from perfluorotetradecanoate? I have been working with the PFAS compounds for a few years now and have been lucky as far as carryover. I've started to see some carryover, with this compound being the worst. I've done routine maintenance on the needle seal, needle, etc. but I'm still having the issue. I thought maybe you would have some insights.

If you're ever headed to Wilmington, let me know.

Thanks

Allen

**Allen Martin**  
**Environment, Health & Safety**  
Method Development Manager

SGS North America  
5500 Business Dr.  
Wilmington, NC 28405-8446

Phone: +1 (910) 350-1903  
Toll Free: +1 (866) 846-8290  
Fax: +1 (910) 350-1557  
E-mail: [allen.martin@sgs.com](mailto:allen.martin@sgs.com)

Information in this email and any attachments is confidential and intended solely for the use of the individual(s) to whom it is addressed or otherwise directed. Please note that any views or opinions presented in this email are solely those of the author and do not necessarily represent those of the Company. Finally, the recipient should check this email and any attachments for the presence of viruses. The Company accepts no liability for any damage caused by any virus transmitted by this email. All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>

Information in this email and any attachments is confidential and intended solely for the use of the individual(s) to whom it is addressed or otherwise directed. Please note that any views or opinions presented in this email are solely those of the author and do not necessarily represent those of the Company. Finally, the recipient should check this email and any attachments for the presence of viruses. The Company accepts no liability for any damage caused by any virus transmitted by this email. All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>

Information in this email and any attachments is confidential and intended solely for the use of the individual(s) to whom it is addressed or otherwise directed. Please note that any views or opinions presented in this email are solely those of the author and do not necessarily represent those of the Company. Finally, the recipient should check this email and any attachments for the presence of viruses. The Company accepts no liability for any damage caused by any virus transmitted by this email. All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>

Information in this email and any attachments is confidential and intended solely for the use of the individual(s) to whom it is addressed or otherwise directed. Please note that any views or opinions presented in this email are solely those of the author and do not necessarily represent those of the Company. Finally, the recipient should check this email and any attachments for the presence of viruses. The Company accepts no liability for any damage caused by any virus transmitted by this email. All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>

Information in this email and any attachments is confidential and intended solely for the use of the individual(s) to whom it is addressed or otherwise directed. Please note that any views or opinions presented in this email are solely those of the author and do not necessarily represent those of the Company. Finally, the recipient should check this email and any attachments for the presence of viruses. The Company accepts no liability for any damage caused by any virus transmitted by this email. All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>

Information in this email and any attachments is confidential and intended solely for the use of the individual(s) to whom it is addressed or otherwise directed. Please note that any views or opinions presented in this email are solely those of the author and do not necessarily represent those of the Company. Finally, the recipient should check this email and any attachments for the presence of viruses. The Company accepts no liability for any damage caused by any virus transmitted by this email. All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>

## Goode, Teresa

---

**From:** Strynar, Mark  
**Sent:** Wednesday, June 21, 2017 9:00 AM  
**To:** Hall, Renea  
**Cc:** Allenbach, Becky; Medina-Vera, Myriam; Lindstrom, Andrew  
**Subject:** RE: GenX clarification  
**Attachments:** highlighted Chemours\_GenX\_Brochure\_Final\_07July2010.pdf

Renea,

I was out office yesterday on travel.

I will answer your questions below however you may get a different answer from Chemours/DuPont. See the attached highlighted brochure.

1. Per the DuPont brochure they appear to call the ammonium salt GenX. In water samples the salt form will dissociate into the anionic form as would the free acid. A mass spectrometer cannot tell them apart as they are the same analyte. Thus I would call both the salt form or the free acid form GenX. Some also call GenX HFPO-DA for the hexafluoropropyl oxide dimer acid (WV consent order).
2. GenX in our study would include both the salt form or the free acid form as they both exist as the anionic deprotonated or desalted acid in the water. Air emission analysis my gave a different answer if the GenX retains the ammonium salt. I am not sure on that.
3. I would say yes bot the salt and acid forms were analyzed in our study as they both go to a common chemical form in water. However, we cannot say which contributed to the measured GenX.

Mark

**From:** Hall, Renea  
**Sent:** Tuesday, June 20, 2017 10:16 AM  
**To:** Strynar, Mark  
**Cc:** Allenbach, Becky  
**Subject:** GenX clarification

Mark,

I left you message, but wanted to follow-up with an email. We need your assistance to help us clarity how "GenX" is defined.

The TSCA sanitized version refers to 2 compounds.

### III. CONTENTS OF PMN

Confidential Business Information Claims (Bracketed in the Preamble and Order): specific chemical identity, production volume, manufacturing process and sites, processing, use, and other information

Chemical Identities:

Specific: **P-08-508** [

CAS no.: [ ] and **P-08-509** [

] CAS no.: [ ].

Generic chemical identity: **P-08-508**—Perfluorinated aliphatic carboxylic acid and **P-08-509**—Perfluorinated Aliphatic Carboxylic Acid, Ammonium Salt

Based on your study, you stated:

- One group of fluorinated alternatives, perfluoroalkyl ether carboxylic acids (PFECAs), was recently discovered in the Cape Fear River (CFR) downstream of a PFAS manufacturing facility....
- The ammonium salt of PFPrOPrA\* is a known PFOA alternative that has been produced since 2010 with the trade name "GenX" ....
- perfluoro- 2-propoxypropanoic acid (PFPrOPrA)}

I have the following questions:

1. Based on your understanding of GenX, does the term "GenX" refer to the salt form OR to both the carboxylic acid and ammonium salt versions?
2. Is "GenX" in your study limited to the salt form?
3. Were both salt and acid forms sampled in your Cape Fear study?

Thanks for your assistance.

Renea Hall  
Environmental Engineer  
WaterSense Coordinator  
EPA Region IV  
61 Forsyth Street  
Atlanta, GA 30303  
(404) 562-8397

**Goode, Teresa**

---

**From:** Strynar, Mark  
**Sent:** Monday, September 12, 2016 10:59 AM  
**To:** Lindstrom, Andrew; Xenia Trier; stefan.vanLeeuwen@wur.nl; wouter.gebbink@wur.nl  
**Subject:** RE: Introduciton to people working on GenX contaminated waters from DuPont  
**Attachments:** Heydebreck et al., 2015.pdf; Gannon et al., 2016 GenX ADME.pdf; Rae et al., 2015 GenX rat toxicity.pdf

One more paper you should be familiar with is Heydebreck et al., 2015 (see attached). They found the GenX compound in German and Chinese waters.

I am also attaching the two studies I know of for tox or ADME of the GenX compound.

As far as analytical questions please do feel free to get back to us.

Mark

**From:** Lindstrom, Andrew  
**Sent:** Monday, September 12, 2016 8:49 AM  
**To:** Xenia Trier ; stefan.vanLeeuwen@wur.nl; wouter.gebbink@wur.nl  
**Cc:** Strynar, Mark  
**Subject:** RE: Introduciton to people working on GenX contaminated waters from DuPont

All,

Thank you for the kind introduction Xenia.

We have been hearing a bit about the GenX situation in the Netherlands and I am pleased that folks are taking the presence of this material seriously. In the US it is very poorly researched and almost completely ignored by scientists and the media.

There are at least two sites here in US with GenX contamination. Both are near DuPont/Chemours production facilities. One is the Cape Fear River system just south of Fayetteville, North Carolina. We wrote about our findings in a paper I have attached above (Strynar et al. 2015).

Please note that with high resolution analysis, Mark Strynar was able to identify a large number of polyfluoroether compounds that you may want to look for too. I don't believe that there are any standards available for most of the non-GenX materials (you can get the Nafion-related compounds) but the area counts in these samples suggest very high levels of these "unknown" materials. I think we're guessing that some of them are present in the river water in the ug/L to mg/L range. Moreover, they behave similarly to other PFAS and are not removed by most drinking water treatment processes. So you should probably look for them too.

I believe that the few published toxicology studies out there are coming from industry sponsored labs. It will be good to see some independent assessments when they become available.

Given what we've found in our recent work, we're becoming convinced that PFAS manufacturing facilities are emitting many PFAS that are not known to regulatory authorities or even the producers themselves. And

sometimes the PFAS levels are extremely high. This would be a great place to do some kind of total fluorine-containing compound assessment looking at what can be identified versus the total F-containing material.

We'd love to hear more about your situation if you can pass anything along.

Take care,

Andy

---

**From:** Xenia Trier [<mailto:Xenia.Trier@eea.europa.eu>]

**Sent:** Wednesday, August 31, 2016 4:25 AM

**To:** Lindstrom, Andrew <[Lindstrom.Andrew@epa.gov](mailto:Lindstrom.Andrew@epa.gov)>; [stefan.vanLeeuwen@wur.nl](mailto:stefan.vanLeeuwen@wur.nl); [wouter.gebbink@wur.nl](mailto:wouter.gebbink@wur.nl)

**Subject:** Introdution to people working on GenX contaminated waters from DuPont

Dear Andrew

Please let me introduce Stefan van Leeuwen and Wouter Gebbink, who are really good analytical chemists working at the Dutch Institute for Food Safety (RIKILT), where they also deal with raw water used for drinking water.

Right now there is a crisis due to an existing DuPont (Chemours) plant, which has contaminated the surface waters, and it has gotten into the ground water.

They would be interested in getting in contact with you to discuss possible analytical and risk assessment issues, and possibly also to hear your experiences with the risk management.

Stefan: Could you please send me some articles on the crisis in the Netherlands, since it would be a good argument for making sure that the GenX and Adona is included into the suite of PFAS to be measured in the HBM4EU.

All the best!  
Xenia

## Goode, Teresa

---

**From:** Strynar, Mark  
**Sent:** Wednesday, July 05, 2017 11:57 AM  
**To:** Carroll, Gregory; Impellitteri, Christopher; Hanley, Adrian; Walker, Lemuel; Wendelken, Steve; Hautman, Dan  
**Subject:** RE: Methods for measuring Gen X in drinking water, wastewater, ambient water  
**Attachments:** PFECAs MD work 7-5-17.pptx

A few slides for our discussion today.

Mark

-----Original Appointment-----

**From:** Carroll, Gregory  
**Sent:** Thursday, June 29, 2017 3:42 PM  
**To:** Carroll, Gregory; Impellitteri, Christopher; Hanley, Adrian; Walker, Lemuel; Wendelken, Steve; Hautman, Dan; Strynar, Mark  
**Subject:** Methods for measuring Gen X in drinking water, wastewater, ambient water  
**When:** Wednesday, July 05, 2017 1:00 PM-1:30 PM (UTC-05:00) Eastern Time (US & Canada).  
**Where:** Cin: Rm 139 or [REDACTED]

In a recent note from Jessica Godreau (NC drinking water program) to Region 4, she described her interest in having analytical methods available to measure "emerging contaminants" in wastewater and ambient water at the same time that we are looking for those contaminants in drinking water. She suggested, for example, that one needs to be able to analyze for the target contaminants in the other matrices in order to investigate and add appropriate discharge permit conditions if the contaminants are found in drinking water above levels of concern. While it looks like Jessica's suggestion was intended to apply broadly, it has prompted specific discussion about Gen X, the short-chain replacement for PFOA.

With that as background, I'd like to talk briefly about method development/validation plans for measuring Gen X in DW, WW, and ambient water. I'm including those whom I hope can best address this:

Chris Impellitteri (to speak to the ORD/OLEM/Region PFAS method development work)  
Mark Strynar (to describe the scope/status of his PFAS method development/validation work)  
Jody Shoemaker (including based on her development of EPA Method 537 to measure PFASs in DW)  
Adrian Hanley and Lem Walker (including based on their work on CWA methods)  
Steve Wendelken (including based on his development of methods for other priority DW contaminants)

Please include others I may have overlooked.

I'm approaching this initial discussion as a status update and a chance to identify gaps and collaboration opportunities, if any.

Greg

Greg Carroll, Director  
Technical Support Center  
Office of Ground Water and Drinking Water  
U.S. EPA

26 W. Martin Luther King Dr. (MS-140)  
Cincinnati, OH 45268  
(513) 569-7948

## Goode, Teresa

---

**From:** Strynar, Mark  
**Sent:** Monday, July 03, 2017 12:28 PM  
**To:** Paul Jackson  
**Subject:** RE: Perfluoro-2-propoxypropanoic acid (PFPrOPrA) CAS 13252-13-6  
**Attachments:** GenX slide MJS 7-3-17.pptx

That is the free acid form of GenX. However if you ask Chemours or DuPont they will likely tell you it is the ammonium form they produce. CAS# 62037-80-3. In the water you cannot tell from which it came.

Mark

---

**From:** Paul Jackson [mailto:Paul.Jackson@pacelabs.com]  
**Sent:** Friday, June 30, 2017 3:21 PM  
**To:** Strynar, Mark <Strynar.Mark@epa.gov>  
**Subject:** RE: Perfluoro-2-propoxypropanoic acid (PFPrOPrA) CAS 13252-13-6

Hi Mark,

Just to clarify - is GenX Perfluoro-2-propoxypropanoic acid (PFPrOPrA) CAS 13252-13-6? I saw an email the other day that indicated that it's a different compound.

Regards,  
Paul

Paul R. Jackson | Program Manager, Specialty Analytical Services | 813.731.1595 | [Paul.Jackson@pacelabs.com](mailto:Paul.Jackson@pacelabs.com)



### Pace Analytical Services, LLC

- 110 South Bayview Blvd. | Oldsmar, FL 34677
- 8 East Tower Circle | Ormond Beach, FL 32174
- Tampa Bay, Ormond Beach, Pompano Beach & over 50 other U.S. locations | [www.pacelabs.com](http://www.pacelabs.com)

>>> "Strynar, Mark" <[Strynar.Mark@epa.gov](mailto:Strynar.Mark@epa.gov)> 6/26/2017 3:45 PM >>>

Sure Paul. Glad to do so. I am on travel now but can chat more after Tuesday when I get back.

Mark

---

**From:** Paul Jackson [<mailto:Paul.Jackson@pacelabs.com>]  
**Sent:** Saturday, June 24, 2017 4:36 PM  
**To:** Strynar, Mark <[Strynar.Mark@epa.gov](mailto:Strynar.Mark@epa.gov)>  
**Cc:** Keith Sturgeon <[Keith.Sturgeon@pacelabs.com](mailto:Keith.Sturgeon@pacelabs.com)>  
**Subject:** Perfluoro-2-propoxypropanoic acid (PFPrOPrA) CAS 13252-13-6

Hi Mark,

I understand from NC DENR that you're involved in the analysis of water samples for GenX. Pace Analytical has analyzed many samples for PFAS compounds but not this one. Keith Sturgeon is our lead chemist on this development. Would you mind comparing notes with Keith about the method?

Regards,  
Paul

Paul R. Jackson | Program Manager, Specialty Analytical Services | 813.731.1595 | [Paul.Jackson@pacelabs.com](mailto:Paul.Jackson@pacelabs.com)



**Pace Analytical Services, LLC**

- 110 South Bayview Blvd. | Oldsmar, FL 34677
- 8 East Tower Circle | Ormond Beach, FL 32174
- Tampa Bay, Ormond Beach, Pompano Beach & over 50 other U.S. locations | [www.pacelabs.com](http://www.pacelabs.com)

## Goode, Teresa

---

**From:** Maddaloni, Mark  
**Sent:** Friday, June 30, 2017 8:42 AM  
**To:** Buckley, Timothy; Strynar, Mark; Lindstrom, Andrew; Medina-Vera, Myriam; Sivertsen, Scott; Johnson, Chris; Allenbach, Becky; linda.culpepper@ncdenr.gov; helen.perez@ncdenr.gov; nick.jones@ncdenr.gov; cyndi.karoly@ncdenr.gov; dana.satterwhite@ncdenr.gov; mark.brantley@ncdenr.gov; morella.sanchez-king@ncdenr.gov; Hall, Renea; France, Danny; Risen, Amy J; Shehee, Mina; Langley, Rick; Sink, Marla; Munger, Bridget; Smith, Emily J.; Newton, Seth; Maguire, Megan; Tong-Argao, Sania  
**Cc:** Hubbard, Carolyn; Gregson, Jim  
**Subject:** RE: PFAS in Cape Fear Drinking Water NC / R4 / NERL Collaboration

Thanks, Tim. Will the "Communications Plan" include a discussion of health-based benchmarks for GenX in drinking water to compare sampling results against?

-----Original Appointment-----

**From:** Buckley, Timothy  
**Sent:** Thursday, June 29, 2017 5:14 PM  
**To:** Strynar, Mark; Lindstrom, Andrew; Medina-Vera, Myriam; Sivertsen, Scott; Johnson, Chris; Allenbach, Becky; linda.culpepper@ncdenr.gov; helen.perez@ncdenr.gov; nick.jones@ncdenr.gov; cyndi.karoly@ncdenr.gov; dana.satterwhite@ncdenr.gov; mark.brantley@ncdenr.gov; morella.sanchez-king@ncdenr.gov; Maddaloni, Mark; Hall, Renea; France, Danny; Risen, Amy J; Shehee, Mina; Langley, Rick; Sink, Marla; Munger, Bridget; Smith, Emily J.; Newton, Seth; Maguire, Megan; Tong-Argao, Sania  
**Cc:** Hubbard, Carolyn; Gregson, Jim  
**Subject:** PFAS in Cape Fear Drinking Water NC / R4 / NERL Collaboration  
**When:** Wednesday, July 05, 2017 2:30 PM-3:30 PM (UTC-05:00) Eastern Time (US & Canada).  
**Where:** [REDACTED]

Feel free to offer additional agenda items if I have left something important out.

### Agenda

- Sampling Update
  - Addition of Fayetteville
  - Samples delivered
  - Samples analyzed
  - Incorporation of performance standards
  - Extending the sampling period
- QAPP Progress
  - Sampling
  - Laboratory
- Results status
- Communications Plan Status
- Scheduling next meeting

Notes / Follow-up from Linda Culpepper following 6/27 conference call

Follow up items from today's conf. call:

- Regional staff have GPS coordinates for sampling locations. Will send an email with those from the Wilmington area. Mark - please send those for the Fayetteville area.
- Mark Brantley knows we also want a sample from the City of Fayetteville water intake on Monday. Mark - appreciate you making arrangements in advance.
- Chemours production staff will be onsite Monday July 3rd and production processes will be active, but some of the other staff will not be at the plant. Arrangements are being made for Mark to get access to outfall 002 for sampling. Test America will not be open July 4th. Due to their requirement to ice the samples, the samples from July 3rd will be held at the Fayetteville Regional Office in the lab refrigerator until Weds. July 5th at which time they will be shipped to Test America in ice. We will include that description in the QAPP and note on the Chain of Custody.
- The sampling process at Chemours outfall 002 does involve using a dipper to collect the sample and then pour it into a container **due to the access point being 6' above the outfall**. The dipper is "rinsed" in outfall 002 effluent prior to sampling. We will include that description in the QAPP.
- Chemours will pay for the trip blank, high spike and low spike **analysis at Test America. Michael Aucoin, Chemours' AECOM consultant coordinating sampling for Chemours and the analysis for all the samples going to Test America, is talking with Test America about the subject EPA sample containers containing nitric acid. The sample kits DEQ received from Test America were not prepped with nitric acid. We will forward the response upon receipt.**
- Test America is only reporting results for GenX - HFPO dimer acid.
- Chris Johnson brought up the concept of getting production samples from the site. Michael Johnson will ask his management. We let Michael know we were going to take the upriver sample and Chris indicated that sample will help us know what they may be bringing into the plant and help understand the effluent leaving the plant. Chris indicated having the production samples will help verify we are analyzing for the correct chemicals. Becky - know you were going to see if the EPA TSCA inspectors could/would take production process samplings. Wanted to give you a heads up about our conversation.
- I will get refinement on DEQ and DHHS contacts for collaboration on future sampling/analysis concepts during our Weds morning call with DEQ & DHHS. Look forward to those planning discussions.
- Jamie Kritzer, DEQ Public Affairs, is getting a Communications team meeting set with DEQ/DHHS/EPA contacts.